



Southwest Georgia Interstate Study

Performance Measures

Technical Memorandum

1.0 Introduction—Performance Measures

The Georgia Department of Transportation is conducting the Southwest Georgia Interstate Study, to examine feasible opportunities for locating an interstate facility in southwest Georgia. The purpose of this Technical Memorandum is to discuss and summarize the performance measures that will be used to assess the impact of the various interstate alignments and other transportation improvement strategies. Development of the criteria, or performance measures, that will be used in assessing the transportation system is an important task in the planning process for this corridor study. A key consideration in determining performance measures is that they are designed to provide information to the transportation planning process for the purpose of decision-making.

2.0 Transportation Performance Measures

An important aspect of the performance measure development process will be to ensure that this data can be readily translated into information understood by the general public and policy makers. One of the major facets of any transportation planning effort is to quantify and analyze the quality of service provided by the current and proposed transportation systems. This quality of service is measured not only for the overall study area, but also for individual system components. A comprehensive assessment of the existing system offers a base, or benchmark, against which proposed improvement strategies can be judged.

Performance measures are developed to determine the impact of a proposed strategy in addressing a study's objectives and goals. There are measures that quantify the impact of a proposed alternative or strategy on the transportation system. Performance measures are based on the level of analysis, i.e., system, corridor and subarea and the proposed alternatives to be analyzed. As part of the Southwest Georgia Interstate study, two types of performance measures will be utilized. The first set will be more general in nature and will be utilized to assess the initial interstate alignments. The second set will be more detailed and will be utilized for the analysis of a variety of improvement strategies for the study area. The major considerations in determining performance measures for the detailed level are:

- Measurable
- Cost-effective data collection
- Clear and intuitive meaning
- Ensure relevance of the measure to actual investment decisions
- Work within the existing capacities of the technical procedures
- Identify measures that have available and accurate data
- Identify measures that are relevant to the users of the transportation system



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2.1 Initial Screening Evaluation Measures

The initial set of measures will focus on the assessment of the initial ten alignment strategies at the broad-brush level. This initial screening of alternatives will be accomplished by assessing the alternative strategies according to general qualitative criteria.

Table 2.1.1 displays the ratings developed for the initial assessment of the initial ten alignment strategies. These criteria are intended to reflect the most critical aspects of the study. This screening process will narrow the set of strategies to those showing the most promise of addressing the problems and needs of the study area. From this screened set of alternatives, four alignments will be identified for more detailed evaluation.

The initial screening of alternatives is primarily qualitative and uses five ratings, which will be represented graphically as shown:

Excellent	++
Good	+
Fair	o
Poor	-
Unacceptable	--

The "excellent" rating applies to alternatives that produce positive effects, the "fair" rating applies to alternatives that produce little or no effect, and the "unacceptable" rating applies to alternatives that produce negative effects. Another part of the screening phase will be to determine the prospect of "fatal flaws" in any of the proposed alternatives. Fatal flaws are defined as: severe constraints or combinations of constraints that affect alternatives so that they no longer appear to be realistic or viable in addressing improved transportation in the study area. This criterion addresses only fatal flaws early in the study process to reduce the number of alternatives that warrant further study. It also serves as a means of differentiating between alternatives in which a variety of factors not represented in other criteria pose fatal flaws to implementation.

Examples of fatal flaws related to environmental concerns could include the taking of endangered species habitat, taking of public parklands or wildlife management areas, or impacts on historic sites on the National Register. Often, the mitigation costs are extremely high, or amending the alternative(s) is so impractical as to prohibit further consideration of the alternative(s).



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Potential fatal flaws will be identified by project team members with recognized expertise in relevant areas of evaluation. They will provide the initial identification of potential fatal flaws.

Table 2.1.1
Criteria for Screening of Initial Alignments

Category	Criteria
Mobility Impacts	1. Highway travel demand
	2. Safety
	3. Accessibility
	4. Connectivity
Social and Cultural	1. Effects on cultural environment
	2. Effects on historic sites
Environment Impacts	1. Effects on natural environment
	2. Effects on land use
Other Factors	1. Consistency with local and regional plans
	2. Construction effects
	3. Constructability

2.2 Detailed Performance Measures

After the initial set of alignments have been evaluated and screened according to the criteria outlined above, the most promising alignment alternates will be analyzed and evaluated in more detail using technical and qualitative measures. The selection of the performance measures reflect the emphasis placed on measures that would best identify difference among the alternates, reflect local and regional plans, address known issues and minimize redundancy. The evaluation of the alternates will not only focus on highway levels of service and demand but will also consider cultural and environmental impacts and consistency with local development plans.

Roadway levels of service have long been used as a key measure for evaluation in transportation planning and traffic operations. Levels of service (LOS) measure roadway performance on an A to F scale, with A being the best and F being the worst. Besides evaluating the impact of infrastructure improvements on roadway LOS, other categories of interest will be utilized for the evaluation of transportation improvements in the study area. These categories focus not only on mobility but have been expanded to include areas such as accessibility, livability and sustainability. Whereas levels of



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service relate to facilities, mobility generally pertains to populations, accessibility to land use, livability to communities, and sustainability to the system performance. Performance measures provide a means to quantify the impact of the proposed alternate or strategy on the transportation system within the study area.

2.2.1 Mobility

Mobility refers to the ease with which individuals can move about. It focuses on the time and cost to move about within the system. The proposed measures to evaluate mobility will include the following:

- Level of service by facility type
- Level of service by area
- Vehicle hours of delay
- Vehicle hours of delay per 1,000 vehicle miles of travel
- Percent of VMT on 2-lane facilities
- Percent of truck VMT on multi-lane facilities
- Major truck movements (within and outside the study area)

2.2.2 Accessibility

Accessibility determines the choice of destination based on mode and land use. It refers to the ease with which individuals travel within the study area. It is determined by the linkages between the transportation system and land use patterns. The proposed measures used to gauge accessibility will include the following:

- Ratio of travel time to interstate travel time
- Estimated district-to-district travel times
- Estimated district-to-district interstate travel times
- Percent of work trips within 20 minutes of jobs
- Percent of non-work trips less than or equal to 15 minutes

2.2.3 Livability

Livability focuses on the characteristics of an area that enhances its appeal as a residential and/or work environment. It is sometimes referred to as the “quality of life” component of a community. It also includes measures that evaluate the impact of the transportation system on the environment.



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The environmental effects of building and using the transportation system should be minimized. The proposed measures used to assess livability include the following:

- Impact on wetlands
- Impact on historic areas
- Impact on cultural areas
- Percent of travel under congested conditions
- Vehicle hours of delay
- Annual Cost of delay

2.2.4 Sustainability

Sustainability focuses on maintaining and preserving the current transportation system. This goal focuses on improving and/or maintaining the linkages between the different modes and preserving the operation of the existing transportation infrastructure. It includes projects and actions that should protect investments in the existing transportation system within the study area; through resurfacing, safety improvements, bridge rehabilitation and reconstruction. The draft measures to evaluate sustainability include the following:

- Vehicle miles per capita
- Vehicle hours of travel per 1,000 vehicle miles of travel
- Automobile and truck crashes

2.2.5 Cost Analysis

The cost effectiveness of the proposed alternatives will be analyzed. The proposed measures to evaluate cost analysis will include the following:

- Capital construction costs
- Benefit-cost analysis

3.0 Land Use Measures

The collection of detailed land use was not performed for this study. Each county's Comprehensive Plan was reviewed¹ to ascertain long range growth priorities, development projects, particular land

¹ All counties' Comprehensive Plans have been reviewed except for Quitman County's plan, which was not available to the consultants (as of June 20, 2008).



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use sensitivities (such as historic preservation and environmental concerns), and economic development initiatives. Approximately half of the counties' Comprehensive Plans are out-of-date (i.e. written in the early 1990s) or are incomplete, however, and many contain only the minimum level of information required for such plans.

The analysis of local growth issues will help to identify high-level opportunities or barriers to the feasibility of a new interstate in southwest Georgia. As a result some of the proposed measures will be more qualitative in nature. The evaluation of alternatives will be primarily qualitative and will use three ratings, which will be represented graphically as shown:

Favorable	+
Neutral	o
Unfavorable	-

The proposed land use measures have been aggregated by three categories, travel impacts, community benefits and land use. Table 3.0.1 lists the proposed performance measures by the three categories.

4.0 Economic Performance Measure

This section of the technical memorandum describes the performance measures that will be developed to evaluate both existing (baseline) and future year economic performance associated with the interstate alternates considered. This will provide a consistent benchmark for the evaluation of the scenarios and a means to rank those alternates that best achieve the project's economic development objectives.

The motivation for this work is the perceived need for greater accessibility as a means to promote growth and development in this region of the State. As detailed in other parts of the study such as the Stakeholder and Public Involvement Plan and the Existing Conditions report, the economy of this part of the State has not prospered to the same degree as other parts of Georgia or the nation as a whole. As a means to narrow the gap in economic performance between Southwest Georgia and the balance of the state, interstate highway investment has been identified as a possible means to spur economic development in this corner of the State.



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Table 3.0.1
Land Use Performance Measures

Category	Performance Measures
Travel Impacts	Access to health care facilities (hospitals)
	Access to higher education facilities
	Access to job training facilities (tech schools)
	Access to employment centers in the study area
	Access to employment centers outside the study area
	Impact on residential population areas (all incomes)
	Impact on environmental justice population areas (low and moderate income)
	Creation of geographically isolated neighborhoods
	Impact on historic, cultural and leisure assets
	Impact on sensitive agricultural lands
Community Benefits	Access to health care facilities (hospitals)
	Access to higher education facilities
	Access to job training facilities (tech schools)
	Access to employment centers in the study area
	Access to employment centers outside the study area
	Impact on residential population areas (all incomes)
	Impact on environmental justice population areas (low and moderate income)
	Creation of geographically isolated neighborhoods
	Impact on historic, cultural and leisure assets
	Impact on sensitive agricultural lands
Land Use	Consistent with Comprehensive Plan land use policies
	Consistent with Comprehensive Plan transportation policies
	Consistent with Comprehensive Plan economic development policies
	Consistent with zoning and land development regulations
	Compatibility with adjacent existing land uses
	Compatibility with regional land use context

4.1 Purpose & Approach

There are three general levels of looking at highway-related economic development: local, regional and national. The most immediate potential impacts of a new interstate highway in Southwest Georgia are local corridor impacts. There are several channels by which road investment may yield local economic development impacts. First, by improving local employers' connection to markets, firms are able to reach a larger market for the same investment of time and travel cost. Expansion of



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the customer base provides the opportunity for greater hiring and associated payrolls that support spending in the local economy. Second, by expanding local firms' accessibility to input markets, they are able to produce at their existing location more efficiently, making them more competitive. This creates the opportunity to expand market share and take on new workers; it also supports business retention as firms are economically successful at their Southwest Georgia location. Finally, by improving accessibility, firms have access to a larger labor market which again supports their ability to compete. Similarly, households have improved access to job opportunities supporting incomes and spending in the local economy.

Regional economic impacts are less common than local impacts, but are still possible given the type of highway investment contemplated in this study. Regional economic impacts, as the term suggests, extend beyond the local corridor. This outcome is achieved most often because of the magnitude of the investment, but may also occur because of synergies created by the investment. As an illustrative example, an East-West route that connected to the Port of Savannah, traversed the Southwest corner of the State, and connected to I-65 in Alabama would both improve distribution opportunities from the Port of Savannah and access along the southern tier of both Georgia and Alabama. Similarly, a route that connected Columbus with I-10 in the vicinity of Tallahassee, again traversing the southwest corner of Georgia, would improve the region's outlook by providing a more reliable connection to more economic developed locations. Although Southwest Georgia has sufficient proximity to the Kia plant in West Point, Georgia, for example, few suppliers have taken advantage of the regional competitive cost structure and located in Southwest Georgia; an improved highway or interstate could, for example, change that dynamic in future auto plant locations, allowing Southwest Georgia to benefit even if Alabama were ultimately selected for the next new auto plant relocation site.

At the national level, the analysis generally takes a network perspective, identifying selective investments that remove bottlenecks or otherwise make intermodal connections that add significant capacity to the overall network. In these instances, local investment yields benefits for firms and consumers in distant locations. The investments considered in this analysis are not expected to have national significance; as a consequence, the performance measures presented below focus on the first two levels only

Reflecting the two levels of potential impacts, the balance of this discussion will focus on performance measures to evaluate the expected regional and local economic impacts of the alternatives considered and their criteria for selection. In addition, general measures will be identified for use in an initial screening of all alternatives identified. More detailed versions of these measures will be applied to the short-list of alternatives created through the initial screening.



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4.1.1 Criteria for Selection of Economic Performance Measures

Anticipating that the selection of alternates will be conducted in stages, an initial set of criteria is proposed that requires a less intensive effort for application. A second set of measures will be developed for application in the subsequent more detailed evaluation once the short-list of alternatives has been identified through the screening process.

Aside from the level of detail required in application, there are several criteria common to both stages of evaluation. Specifically, the criteria applied need to be:

- Quantifiable whenever possible to permit comparisons of the magnitude of expected impacts,
- Consistent with the economic development objectives of the communities/region,
- Comprehensive in scope to describe variety of possible benefit types resulting from highway investment without duplicating benefits/impacts measured, and
- Clear and consistent in their interpretation.

4.1.2 Performance Measures for Application in Initial Screening

As described above, both regional and local economic development outcomes may potentially result from the interstate investment. Reflecting this possibility, alternatives will be screened against two sets of criteria as outlined in Table 4.1.2.1.

4.1.3 Performance Measures for Application in Detailed Analysis of Project Short-List

The detailed economic development performance measures, shown in Table 4.1.3.1, are structured in a similar fashion to the initial screening measures in that they examine both local and regional impacts. The detailed measures build on information developed through the conduct of the study, quantifying the economic value of safety improvements, travel time savings, and expected economic development.



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Table 4.1.2.1
Proposed Initial Economic Development Screening Criteria

Performance	Measurement
Potential Local Economic Impacts	
Consistent with local development objectives	Evidence that communities along alignment seek commercial /industrial development of industries benefiting from road improvements.
Supports existing economy	Population and employment located within 15 minute drive of alignment
Minimizes economic disruption	Number of homes or businesses displaced by the alignment
Potential Regional Economic Impacts	
Consistent with regional or state development objectives	Identification of regional or state development plans targeting commercial/industrial development of industries benefiting from road improvements
Impact to goods movement	Expected improvement to shipment reliability? Provide viable alternative to other freight route?
Leverages other regional infrastructure assets	Identification of regional asset leveraged, ie, improved Port access, connects to rail line or other interstate segments
Supports other regional initiatives/ installations	Identification of initiative or installation served. Example: supports military activities, making region competitive in subsequent BRAC reviews



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Table 4.1.3.1
Proposed Detailed Economic Development Screening Criteria

Performance	Measurement
Potential Local Economic Impacts	
Travel time savings	Value of time saved through use of the highway alternative, by truck and by car
Travel cost savings	Value of cost savings attributable to vehicle operations attributable to use of the highway alternatives, by truck and by car
Improved safety	Value of accidents avoided
Local economic development	Commercial development at interchanges and close proximity to corridor communities measured as net new jobs, commercial square footage and income
Fiscal health	Tax yield associated with net gain in local income and commercial development
Potential Regional Economic Impacts	
Regional development impacts	Expected net gain in employment (range) and associated income and commercial square footage
Employment diversification	Opportunity for new industry consistent with skill base of regional labor pool; diversity index
Improved shipment reliability	Evidence of reduced inventory or more efficient utilization of fleet
Fiscal health	Tax yield associated with net gain in regional income and commercial development
Cost effectiveness	Cost-benefit ratio

4.1.4 Methods for Detailed Economic Assessment

In general, there are four broad classes of economic benefits that should be considered. Benefits will accrue through the transportation improvement's 1) construction, 2) through its use, and 3) from the market's response to the improved level of service that it affords. Fiscal benefits represent the fourth class of benefit, as tax revenues increase due to the expansion of economic activity



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accommodated by the investment. A brief description of each is provided below using a highway improvement scenario as the example.

Construction Benefits. The initial economic benefits associated with the transportation investment are generated by the direct expenditures associated with building the new highway. Construction spending increases the employment, earnings and output for the duration of the construction process as building firms expand payrolls and purchase materials. The hiring associated with the building activity represents the direct effects of the corridor construction investment. The earnings of these newly-hired construction workers will translate into a proportional increase in consumer demand as these workers purchase goods and services in the region generating additional jobs across a variety of industrial sectors and occupational categories as employers hire to meet this increase in local consumer demand. This latter hiring represents the indirect effect of the project. *These are one-time benefits that last for the duration of the construction cycle.*

User Benefits. Once the road is built, the user benefits can be realized as residents, tourists, and commercial vehicles travel the corridor more efficiently and in greater safety. These user benefits have economic value. These user benefits include time savings, vehicle operating cost savings, and savings associated with increased safety; that is, accidents and fatalities that are avoided. Among the most significant of the user benefits is increased safety. Some improvements will have particular benefits for the freight industry. In addition to those noted above, there will be benefits to shippers and customers of shippers in terms of greater reliability and potentially lower costs.

Economic Development Benefits. The market's response to the improved level of service provided by the new or improved transportation facility can take various forms, reflecting the scale and structure of the local economy in which it resides. Examples of these include interchange development such as roadside services, distribution industry expansion, the introduction of a new industry, or even leisure and recreational expansion such as facilities catering to seasonal hunters and birdwatchers. Although the provision of transportation infrastructure does not cause economic growth, it is an essential ingredient in the growth equation that unlocks the potential of other regional assets and advantages and improves the economy's competitive position.

Quality of Life/Industrial Diversity. Dependable, efficient and safe movement of people and goods is essential for an economy to operate. Transportation systems are an important ingredient in the economic success of cities and regions. The reduction of daily traffic congestion makes a community a better place to live. Similarly, the cumulative effect of expanding roadside commercial activity, of expanding distribution activity, of other industrial activity accommodated by the service provided by the transportation investment, and through supporting tourism activity is that the local



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communities will rely on a greater range of employers and types of jobs. That is, local economies will become more industrially diverse.

Industrial diversity benefits local economies in two ways. First, because there are more types of firms in the community, residents' economic fortunes are not tied to a single industry or employer. Workers have more opportunities from which to choose. Industrial diversity also increases in the variety of goods and services available to local residents, thereby improving the quality of life available to them in their home economies. Consumers have more local choices. Transportation investment may simply make the community a more attractive place to live and work by enhancing the amenities available in the local economy.

Fiscal Impacts. The expansion of payrolls and commercial development described above increases the tax base of corridor communities. Retail tax receipts, lodging taxes, and taxable property will increase as new jobs are created and as visitors come through the corridor. These revenues stay in the communities and help local government provide services such as schools, parks and other public services.

Table 4.1.4.1 provides an illustrative summary of the possible impacts for a hypothetical highway investment scenario. The range of potential benefits, the range of transportation improvements considered, and the differences among regional economies (e.g. large metropolitan, rural manufacturing-based, or agricultural) in which these benefits would be generated calls for an approach that is comprehensive and flexible and a reporting mechanism that is transparent and uniformly structured across investment scenarios.

While each alternative assessment is likely to differ in the details because of the unique context and qualities of the scenario, a full economic assessment will be comprised of a similar sequence of activities that analyze expected economic impacts in a systematic way. Although the emphasis will be to quantify the benefits of the transportation investment, qualitative discussion will also be included in order to describe benefits that cannot be monetized, but also as a way of communicating what the economic impacts can mean for Southwest Georgia's communities.

The diverse nature of the investment scenario's benefits, as well as the unique characteristics of the regional economies, requires a methodology that is broad and flexible enough to accommodate a diverse range of benefit types and risks to their realization, but still sufficiently rigorous to provide transportation policy makers with solid information on which to base decisions.



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Table 4.1.4.1
Illustrative Summary of Benefit Types

Type of Benefit	How Generated?	How Measured?	Who Gains?	Temporary/Permanent?
INFRASTRUCTURE CONSTRUCTION	Local employment Locally produced materials	Jobs Income	Corridor Residents	Temporary during construction phase
ECONOMIC DEVELOPMENT Roadside Services Auto Suppliers Distribution Agricultural shippers/processors	Increased traffic makes corridor locations more attractive, highway improvements make route viable alternative to congested routes	Jobs Income Property Value	Corridor Residents	Permanent
SAFETY	Safer road design	Fewer accidents \$ of accident-related costs	All road users	Permanent
FISCAL	Broadening of the tax base	\$ of tax revenue	City, county & state	Permanent
QUALITY OF LIFE	Greater variety of industrial activities reduces reliance on single industry	Number and type of establishments	Corridor Residents, other economic development initiatives	Permanent

To that end, the study methodology pairs interviews and briefings with key stakeholders with an analytical process that describes, and where possible, quantifies the construction, economic development, fiscal and transportation user benefits attributable to the investment scenario. Because one of the key objectives of the investment scenario may be the creation of new economic opportunity, building this dual approach into the study methodology is essential to providing decision makers with a complete and thorough review of what the investment scenario could mean for a regional economy within Southwest Georgia.

By their very nature, quantitative economic and transportation models extrapolate past trends and existing structural relationships into the future. Provided the structure of Southwest Georgia's economy does not change significantly, these models can do a good job of quantifying the future impacts. Traditional economic models, however, will not predict the emergence of an entirely new industry within the regional economy. When structural changes are anticipated, however, as might occur in response to substantial new transportation infrastructure investment, economic models must be supplemented with other types of information such as that which can be obtained through



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interviews. This is because the professional judgment of knowledgeable experts can be much more forward-looking than a model based on historical data.

The construction of an entirely new interstate roadway has the potential to affect the regional economy of Southwest Georgia in ways that would alter the competitive status of the region as it seeks to attract economic development. The investment could 1) create favorable conditions for large-scale industrial development where none existed before, 2) connect smaller communities along a corridor in ways that permit them to become economically integrated to a greater extent to compete with larger markets, or 3) provide a considerably improved freight service to shippers in the state. Taken in total, these changes have the potential to change a regional economy in ways that models alone cannot capture.

Recognizing this, the Consultant team suggests conducting interviews with industry groups and stakeholders for the detailed assessments. This interview process provides the assessment team with the community's views about the possible character and type of new development and of the new competitive advantages that would be created by the investment strategy. Armed with this information about what the community and knowledgeable stakeholders view as the economic prospects opened up by the investment strategies, models are applied to provide an estimate of what these changes could mean to the community in terms of jobs and earnings. In this way, the interviews and economic analysis offer complementary information to provide decision makers with a comprehensive assessment of an investment scenario's potential for the regional economy of Southwest Georgia and the state as a whole.

The analytical approach addresses four specific categories of impacts generated from the proposed investment scenario.

- User benefits such as accidents avoided, travel time savings, benefits to shippers, and vehicle operating savings.
- Economic impacts from construction activities
- Economic development benefits measured in terms of commercial development, jobs and income
- Fiscal impacts from a broader and deeper tax base.

The analyses will be structured to address multiple measures across the four categories. The analytical applications are briefly defined below and discussed more fully in separate subsections, which follow:

- Quantification of User Benefits to value accidents avoided and time saved



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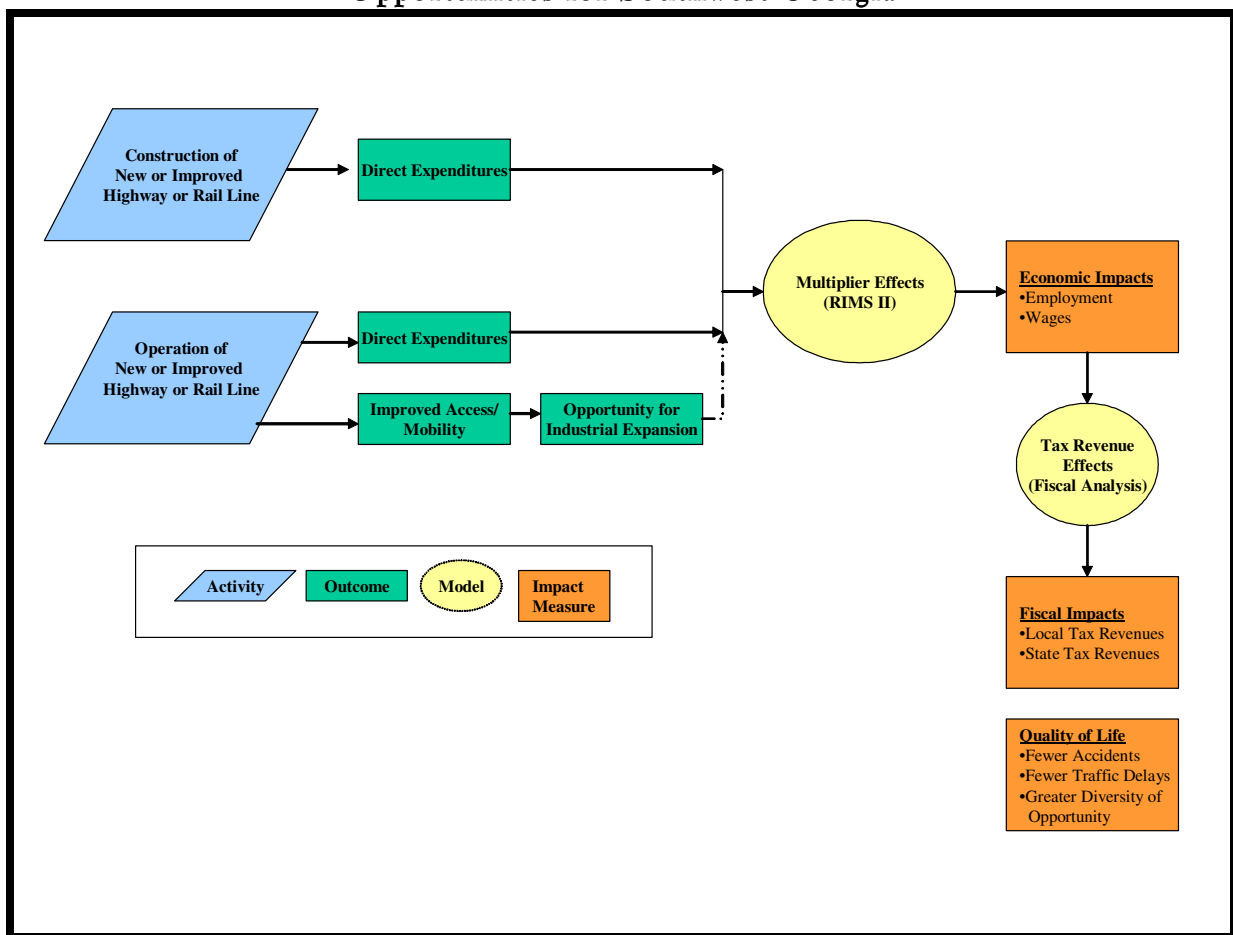
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- Application of the RIMS II model to estimate economic impacts
- Tax Base Analysis to quantify effects on state and local government revenues

The diagram presented in Figure 4.1.4.1 depicts the process proposed to estimate the impacts and how the results of the component analyses are combined to accomplish a comprehensive assessment.

Figure 4.1.4.1
Expenditures, Improved Access and Mobility Generate Gains and Development Opportunities for Southwest Georgia



The balance of this discussion describes the three basic methodologies that are combined to comprehensively assess the investment scenario.



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4.1.4.1 User Benefit Estimation

Increases in mobility and reductions in congestion provide benefits to users of the network. It is important that these benefits be quantified in dollar terms, to the extent possible. In some cases, benefits are costs avoided, such as congestion, accidents, travel expenses, etc. The following represents the various categories of benefits (and costs avoided) to be included in this analysis:

- Savings to shippers (difference in time and \$ cost between use of the existing and new routes)
- Incident reduction such as accidents
- Congestion mitigation on highways and at grade crossings (if applicable)

The categories of benefits will focus on "direct" transportation benefits of the project. Overall the analytical approach is to develop a value of time applicable to the local economy, a typical cost per accident following US DOT Guidance, and measures of typical vehicle operating costs and apply them to the project time savings and number of incidents avoided. The transportation benefits analysis will be conducted using the following series of assumptions to guide the analysis:

- A baseline or study year for estimating benefits will be established.
- All benefits will be stated in constant year dollars (e.g., 2007).
- Benefits will be assumed to increase at a rate per year beyond the baseline year commensurate with forecast growth rates.
- Quantitative estimates of transportation benefits will be provided in net present value dollars, using the analysis year selected.
- All benefits will be reflected in net present value terms using an appropriate discount rate.
- Benefits will be estimated over a time period, which closely reflects the useful life of the transportation investments made.

4.1.4.2 Input-Output Based Models (RIMS II)

The economic impacts associated with construction activity and with industrial activity accommodated by the investment scenario, can be measured using regional multipliers from the Bureau of Economic Analysis (BEA) within the U.S. Department of Commerce. Derived from the Regional Input-Output Modeling System, the so-called RIMS II multipliers measure the total change (direct + indirect effects) in output, employment, value added and earnings that results from an exogenous and incremental change to a particular industry. The RIMS II model provides economic impacts from investments and operations in the following forms:



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- Total final-demand multipliers for output, earnings, value added, and employment
- Total direct-effect multipliers for earnings and employment

The Input-Output Models are applied in several points through the analysis. The economic impacts estimated range from one-time impacts from construction activities to the recurring economic impacts stemming from new intermodal facilities or new industrial opportunities identified in the interview process. In particular, there are two main benefit types where the I-O approach is used.

4.1.4.2.1 Construction Jobs Due to the Investment Scenario

The initial impacts are generated by the direct expenditures associated with constructing the infrastructure and associated facilities and the employment and income generated for residents of the region. These direct and immediate effects provide an additional economic gain as spending occurs and is captured within the regional economy.

4.1.4.2.2 Development Potential Created by the Investment Scenario

The transportation investment scenario may open up opportunities for the development of new industry or expansion of existing industry. Although the transportation investment cannot be considered a cause of this type of development, its provision arguably contributes to this type of economic growth. I-O based models are used in this portion of the analysis to quantify size of the economic opportunities accommodated by the investment scenario.

4.1.4.3 Fiscal Analysis

The estimation of fiscal impacts will be developed to show the financial return on the public infrastructure investment. This type of analysis involves estimation of tax base changes, e.g. increases in income, and the resultant tax revenue implications, e.g. sales tax increases generated by increased spending of household units. The data for this work are generally available from both state and county departments of revenue/taxation. These rates are applied to the incremental increases estimated in other parts of the study in order to estimate the fiscal impact.



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